



## DIGITAL CONES



### Downhole Analog-to-Digital Conversion

- Simple Operation
- Multi-sensor Efficiency
- Compact, Rugged Portability

- ▶ **COMPACT, RUGGED SYSTEM** – VERTEK's Digital Cones provide simple, easy-to-use CPT measurement in a compact and rugged system. Because Analog-to-Digital conversion is performed downhole, the bulkiness of cabling and uphole electronics are reduced, and noise problems associated with cable length and low voltage signals of analog systems are eliminated. The high signal-to-noise ratio of a digital system makes data communications virtually impervious to cable-induced noise. VERTEK's rugged 10-conductor cable with LEMO-type connector ensures reliable data transmission with each penetration.
- ▶ **SIMPLE, EASY-TO-USE OPERATION** – Data collected downhole is transmitted in ASCII format providing complete compatibility with commercially available laptops as well as VERTEK's DATAPACK data acquisition systems. Since sensor specific data (calibration factors, serial numbers, and sensor type) are stored in each sensor module in the cone, and are automatically transmitted to the laptop or DATAPACK with each penetration, a technician can operate the system with minimal training.
- ▶ **MULTI-SENSOR EFFICIENCY** – VERTEK's Digital Cones are available in ASTM standard sizes: 10-cm<sup>2</sup> and 15-cm<sup>2</sup> for 20- and 30-ton combined loading. The digital design allows configuration of multiple digital sensors in a single cone with only four conductors, leaving 6 conductors for other special sensors. A fully loaded configuration could include:
  - tip load, sleeve friction, pore pressure, soil moisture, resistivity, temperature, inclination, and digital Fuel Fluorescence Detector together on four conductors
  - and Videocone, Seismics, or Gamma sensors on the remaining six conductors.
- ▶ **INDUSTRY LEADING PERFORMANCE** - By decoupling the tip and sleeve load cells and sensing each independently, VERTEK Digital Cones provide higher load capacity and better resolution than industry standards. Accurate temperature compensation assures reliable performance in soft soils.



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- **DURABLE, RELIABLE** - VERTEK's Digital Cones were designed with special alloy steel construction and fully replaceable wear surfaces, assuring extended service life in even tough, cemented soils. An optional special coating is also available for even better durability. Friction sleeves, tips, and pore pressure filters are easily replaced in the field, and the LEMO-type connector allows fast cone replacement, avoiding expensive downtime.

SPECIFICATIONS		
CONE SIZE	10-cm <sup>2</sup>	15-cm <sup>2</sup>
RESOLUTION	200μv	200μv
MAX. SENSOR INPUT	3.5V	3.5V
POWER REQUIREMENTS	12VDC	12VDC
RANGE AND ACCURACY		
<i>Tip Load Cell</i>		
Range (kN)	100	225
Range (lb)	22,000	50,000
Overload Cap (%)	150	150
Accuracy (%)	0.2	0.2
<i>Sleeve Load Cell</i>		
Range (kN)	20	45
Range (lb)	4,400	10,000
Overload Cap (%)	150	150
Accuracy (%)	0.2	0.2
<i>Pore Pressure Transducer</i>		
Standard Range (Mpa)	3.5	3.5
Standard Range (psi)	500	500
Burst Pressure (%)	150	150
Accuracy (%)	0.5	0.5
<i>Inclinometer</i>		
Range (+/-°)	15	15
Accuracy (°)	1	1
OPTIONAL COATING	Thermal sprayed tungsten carbide	
(for exceptional durability)	70 – 80 per Rockwell Hardness	
All VERTEK Digital Cones are calibrated against a NIST standard.		



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